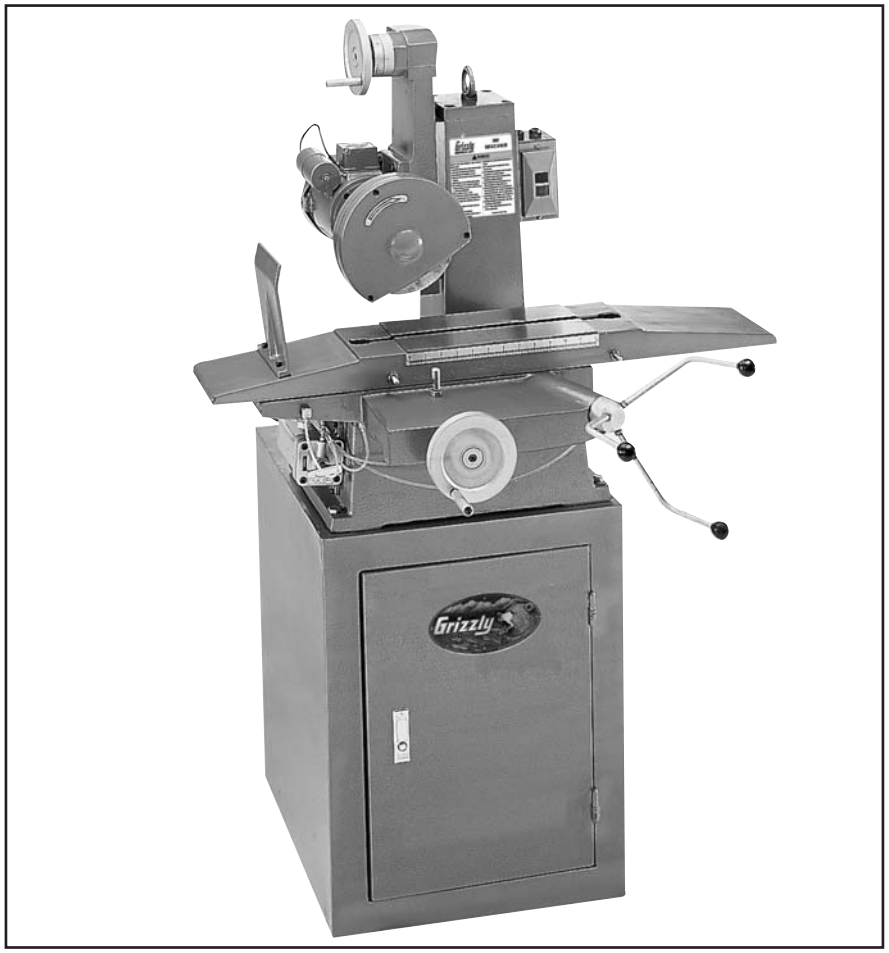
Grizzly Industrial, Inc.®

6" x 12" SURFACE GRINDER

MODEL G5963

INSTRUCTION MANUAL



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MARCH, 2000 PRINTED IN CHINA

WARNING!

Some dust created by power sanding, sawing, grinding, drilling, and other construction activities contains chemicals known to the State of California to cause cancer, birth defects or other reproductive harm. Some examples of these chemical are:

- **Lead from lead-based paints.**
- **Crystalline silica from bricks, cement and other masonry products.**
- **Arsenic and chromium from chemically-treated lumber.**

Your risk from these exposures varies, depending on how often you do this type of work. To reduce your exposure to these chemicals: Work in a well ventilated area, and work with approved safety equipment, such as those dust masks that are specially designed to filter out microscopic particles.

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SECTION 1: SAFETY

⚠WARNING

For Your Own Safety Read Instruction Manual Before Operating This Equipment

The purpose of safety symbols is to attract your attention to possible hazardous conditions. This manual uses a series of symbols and signal words which are intended to convey the level of importance of the safety messages. The progression of symbols is described below. Remember that safety messages by themselves do not eliminate danger and are not a substitute for proper accident prevention measures.

⚠DANGER Indicates an imminently hazardous situation which, if not avoided, WILL result in death or serious injury.

⚠WARNING Indicates a potentially hazardous situation which, if not avoided, COULD result in death or serious injury.

⚠CAUTION Indicates a potentially hazardous situation which, if not avoided, MAY result in minor or moderate injury. It may also be used to alert against unsafe practices.

NOTICE This symbol is used to alert the user to useful information about proper operation of the equipment.

⚠WARNING

Safety Instructions For Power Tools

1. KEEP GUARDS IN PLACE and in working order.
2. REMOVE ADJUSTING KEYS AND WRENCHES. Form habit of checking to see that keys and adjusting wrenches are removed from tool before turning on.
3. KEEP WORK AREA CLEAN. Cluttered areas and benches invite accidents.
4. DON'T USE IN DANGEROUS ENVIRONMENT. Don't use power tools in damp or wet locations, or where any flammable or noxious fumes may exist. Keep work area well lighted.
5. KEEP CHILDREN AND VISITORS AWAY. All children and visitors should be kept a safe distance from work area.
6. MAKE WORK SHOP CHILD PROOF with padlocks, master switches, or by removing starter keys.
7. DON'T FORCE TOOL. It will do the job better and safer at the rate for which it was designed.
8. USE RIGHT TOOL. Don't force tool or attachment to do a job for which it was not designed.

⚠WARNING

Safety Instructions For Power Tools

9. USE PROPER EXTENSION CORD. Make sure your extension cord is in good condition. Conductor size should be in accordance with the chart below. The amperage rating should be listed on the motor or tool nameplate. An undersized cord will cause a drop in line voltage resulting in loss of power and overheating. Your extension cord must also contain a ground wire and plug pin. Always repair or replace extension cords if they become damaged.

Minimum Gauge for Extension Cords

	LENGTH		
AMP RATING	25ft	50ft	100ft
0-6	18	16	16
7-10	18	16	14
11-12	16	16	14
13-16	14	12	12
17-20	12	12	10
21-30	10	10	No

10. WEAR PROPER APPAREL. Do not wear loose clothing, gloves, neckties, rings, bracelets, or other jewelry which may get caught in moving parts. Non-slip footwear is recommended. Wear protective hair covering to contain long hair.

11. ALWAYS USE SAFETY GLASSES. Also use face or dust mask if cutting operation is dusty. Everyday eyeglasses only have impact resistant lenses, they are NOT safety glasses.

12. SECURE WORK. Use clamps or a vise to hold work when practical. It's safer than using your hand and frees both hands to operate tool.

13. DON'T OVERREACH. Keep proper footing and balance at all times.

14. MAINTAIN TOOLS WITH CARE. Keep tools sharp and clean for best and safest performance. Follow instructions for lubricating and changing accessories.

15. DISCONNECT TOOLS before servicing and changing accessories, such as blades, bits, cutters, and the like.

16. REDUCE THE RISK OF UNINTENTIONAL STARTING. Make sure switch is in off position before plugging in.

17. USE RECOMMENDED ACCESSORIES. Consult the owner's manual for recommended accessories. The use of improper accessories may cause risk of injury.

18. CHECK DAMAGED PARTS. Before further use of the tool, a guard or other part that is damaged should be carefully checked to determine that it will operate properly and perform its intended function. Check for alignment of moving parts, binding of moving parts, breakage of parts, mounting, and any other conditions that may affect its operation. A guard or other part that is damaged should be properly repaired or replaced.

19. NEVER LEAVE TOOL RUNNING UNATTENDED. TURN POWER OFF. Don't leave tool until it comes to a complete stop.

⚠WARNING

Additional Safety Instructions For Surface Grinders

1. Ensure that the machine sits firmly on the floor before use. Any “wobbles” must be corrected by shimming or blocking before operation.
2. This machine is not designed to process any other material except metals.
3. Never position fingers or hands directly between the grinding wheel and the table.
4. Do not operate surface grinder with cracked or damaged grinding wheels.
5. Always use extreme care in handling grinding wheels during installation. Always “ring check” the wheel to determine possible damage.
6. Ensure that the surface grinder is properly adjusted before using.
7. Never load or unload the workpiece while the grinding wheel is rotating or the table is moving.
8. If using coolants for grinding, always read and understand the user information listed on the coolant container. Some coolants used for machining may be hazardous to your health if not used and stored properly.
9. This manual is intended to familiarize you with this grinding machine. It is not, nor was it ever intended to be, a comprehensive training manual.

⚠WARNING

Like all power tools, there is danger associated with the Model G5963 Surface Grinder. Use the tool with respect and caution to lessen the possibility of mechanical damage or operator injury. If normal safety precautions are overlooked or ignored, serious personal injury may occur.

⚠CAUTION

No list of safety guidelines can be complete. Every shop environment is different. Always consider safety first, as it applies to your individual working conditions. Use this and other machinery with caution and respect. Failure to do so could result in serious personal injury, damage to equipment or poor work results.

⚠WARNING

Operation of this equipment has the potential to propel debris into the air which can cause eye injury. Always wear safety glasses or goggles when operating equipment. Everyday glasses or reading glasses only have impact resistant lenses, they are not safety glasses. Be certain the safety glasses you wear meet the appropriate standards of the American National Standards Institute (ANSI).

SECTION 2: CIRCUIT REQUIREMENTS

110V Operation

The motor supplied with the G5963 can be operated at either 110V or 220V. The motor comes prewired for 110V. If you wish to operate at 220V, refer to the section at right.

Under normal use, the motor draws approximately 7.4 amps @ 110V. We recommend a 15 amp circuit breaker for 110V operation. This should be satisfactory for normal use, while providing enough protection against motor damage caused by power surges.

Grizzly recommends that the circuit you use should be dedicated, (i.e., the G5963 should provide the only draw from that circuit). If frequent circuit failures occur when using the Surface Grinder, contact our Service Department or your local electrical contractor.

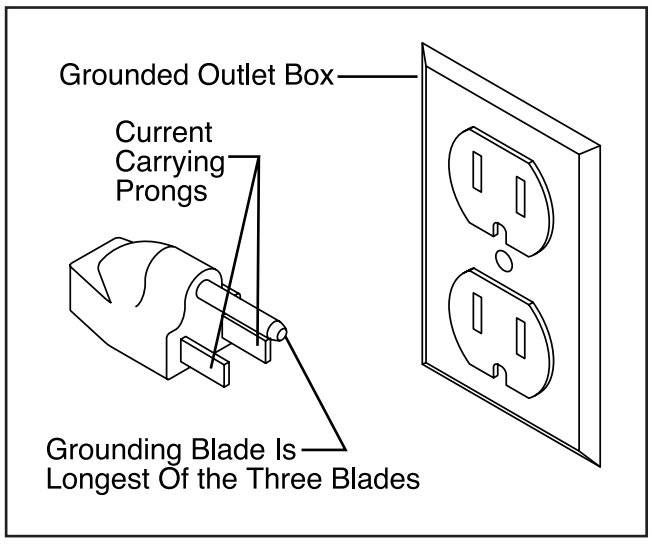

Figure 1. Typical 110V plug and outlet.

220V Operation

The G5963 Surface Grinder motor can be rewired to operate at 220V. Refer to the wiring diagram supplied with this manual. If converting to operate at 220V, the 110V plug must be replaced with a 220V plug. Plugs and receptacles can be purchased at your local hardware store or home center. The type of plug you choose will depend upon the type of 220V outlet used in your installation. See Figure 2 for a typical plug and outlet. This plug must be rated for at least 15 amp draw.

It is not necessary to change the switch supplied with the G5963 for 220V operation.

Under normal 220V use, the motor draws approximately 3.7 amps. We recommend a 10 amp circuit breaker or a 10 amp slow-blow fuse.

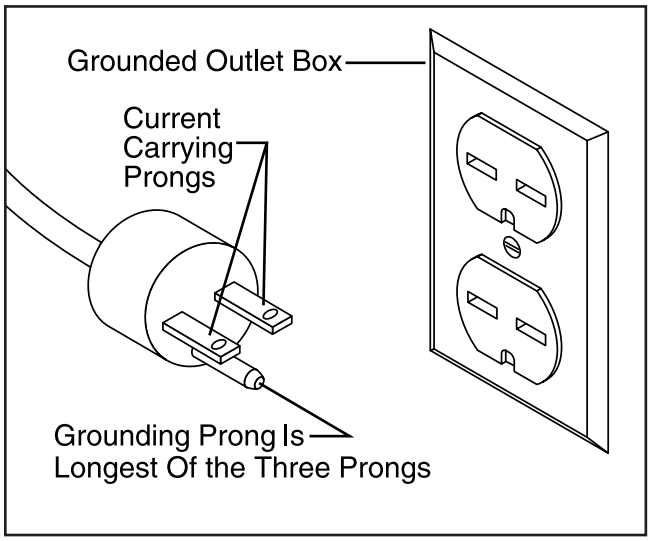

Figure 2. Typical 220V plug and outlet.

Grounding

In the event of an electrical short, grounding reduces the risk of electric shock by providing a path of least resistance to disperse electric current. This tool is equipped with a power cord having an equipment-grounding conductor. See Figure 1 and 2. The outlet must be properly installed and grounded in accordance with all local codes and ordinances.

⚠WARNING

This equipment must be grounded. Please ensure that this machine is continuously grounded from the motor to the machine frame and then to a known ground. Verify that any existing electrical outlet and circuit you intend to plug into is actually grounded. If it is not, it will be necessary to run a separate 12 A.W.G. copper grounding wire from the outlet to a known ground. Under no circumstances should the grounding pin from any three-pronged plug be removed. Serious personal injury may occur.

Extension Cords

We do not recommend the use of extension cords on 220V equipment. It is much better to arrange the placement of your equipment and the installed wiring to eliminate the need for extension cords. Should it be necessary to use an extension when operating at 110V, make sure the cord is rated Hard Service (grade S) or better. Refer to the chart in Section 1: Safety Instructions to determine the minimum gauge for the extension cord. The extension cord must also contain a ground wire and plug pin. Always repair or replace extension cords when they become worn or damaged.

Check Motor Rotation

After the machine is assembled and properly connected to electrical power, test the motor rotation. Cycle the machine on and observe the rotation of the grinding wheel. Make sure it rotates in the direction indicated by the arrow on the wheel guard. If it does not, the wiring may not be properly connected at the motor. Disconnect from the power source, and check that the motor wiring agrees with the wiring diagram provided in this manual. Make necessary adjustments, close the motor cover, reconnect to power, and test again.

⚠CAUTION

We have covered some basic electrical requirements for the safe operation of your Surface Grinder. These requirements are not necessarily comprehensive. You must be sure that your particular electrical configuration complies with local and state codes. Ensure compliance by checking with your local municipality or a licensed electrician.

SECTION 3: GENERAL INFORMATION

Commentary

We are proud to offer the Grizzly Model G5963 Surface Grinder. The Model G5963 is part of a growing Grizzly family of fine metalworking machinery. When used according to the guidelines set forth in this manual, you can expect years of trouble-free, enjoyable operation and proof of Grizzly's commitment to customer satisfaction.

The Model G5963 is intended for home and professional use. The G5963 features a ¾ HP, 110V/220V single-phase motor, solid one-piece cabinet stand, 6" x 12" sliding table surface, one-shot lubricator, swarf guard, easy-to-reach handwheels, wheel balancer, diamond dresser and high precision lead screws.

A number of optional accessories for the Model G5963 are available through the Grizzly catalog. They include a magnetic chuck, magnetic V-blocks and a selection of replacement grinding wheels

We are also pleased to provide this manual with the Model G5963. It was written to guide you through assembly, review safety considerations, and cover general operating procedures. It represents our effort to produce the best documentation possible. If you have any comments regarding this manual, please write to us at the address below:

Grizzly Industrial, Inc.
C/O Technical Documentation
P.O. Box 2069
Bellingham, WA 98227-2069

Most importantly, we stand behind our machines. If you have any service questions or parts requests, please call or write us at the location listed below.

Grizzly Industrial, Inc.
1203 Lycoming Mall Circle
Muncy, PA 17756
Phone: (570) 546-9663
Fax: (800) 438-5901
E-Mail: techsupport@grizzly.com
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The specifications, drawings, and photographs illustrated in this manual represent the Model G5963 as supplied when the manual was prepared. However, owing to Grizzly's policy of continuous improvement, changes may be made at any time with no obligation on the part of Grizzly. Whenever possible, though, we send manual updates to all owners of a particular tool or machine. Should you receive one, we urge you to insert the new information with the old and keep it for reference.

⚠CAUTION

To operate this, or any power tool, safely and efficiently, it is essential to become as familiar with its characteristics as possible. The time you invest before you begin to use your Model G5963 will be time well spent. DO NOT operate this machine until you are completely familiar with the contents of this manual. Make sure you read and understand all of the safety procedures. If you do not understand something, DO NOT operate the machine.

Unpacking

The surface grinder is shipped from the factory in two carefully packed crates. If you find the machine to be damaged after you've signed for delivery and the truck and driver are already gone, you will need to file a freight claim with the carrier. Save the containers and all packing materials for inspection by the carrier or their agent. Without the packing materials, filing a freight claim can be difficult. If you need advice regarding this situation, please call us immediately.

⚠WARNING

The G5963 is a heavy machine with a 660 lb. shipping weight. DO NOT over-exert yourself while unpacking or moving your machine – get assistance. In the event that your machine must be moved up or down a flight of stairs, be sure that the stairs are capable of supporting the combined weight of people and the machine. Failure to use care while assembling or moving could result in serious personal injury.

Parts Inventory

After all the parts have been removed from the container, you should have:

- Surface Grinder Unit
- Stand
- Table
- Guard and Mounting Hardware
- Tool Box
  - Handwheel Spokes (3)
  - Handwheel Handles (2)
  - Leveling Pads
  - Dressing Diamond w/ Mount
  - Slotted Wrench
  - Pin Wrench
  - Screwdrivers (2)
  - Adjustable Wrench
  - Double End Wrench 17/19 mm
  - Allen® Wrenches 3, 4 & 5 mm
- Grinding Wheel

In the event that any parts are missing, we will be happy to replace them. Contact our Customer Service number for assistance. If any non-proprietary parts such as nuts, bolts or washers are missing, we will be happy to replace these too, but for the sake of expediency, these items can be obtained at your local hardware store.

NOTICE

A full parts list and breakdown can be found toward the end of this manual. For easier assembly, or to identify missing parts, please refer to the detailed illustrations at the end of the manual.

Clean Up

The unpainted surfaces are coated with a waxy oil to protect them from corrosion during shipment. Remove this protective coating with a solvent cleaner or degreaser such as Grizzly's G7895 Citrus-based Degreaser. Avoid chlorine-based solvents as they may damage painted surfaces should they come in contact. Always follow the usage instructions on the product you choose for clean up.

⚠WARNING

Follow the safety rules listed below when working with solvents.

1. Read and follow all directions and warnings on the solvent label.
2. Work only in a well ventilated area.
3. Do not work near any type of open flame (e.g., pilot lights, kerosene heaters, and so on).
4. DO NOT smoke while working with flammable material.
5. Paper towels from the cleaning process are extremely combustible. Dispose of waste towels so they do not create a fire hazard.

⚠CAUTION

Many of the solvents commonly used to clean machinery can be highly flammable, and toxic when inhaled or ingested. Always work in well-ventilated areas far from potential ignition sources when dealing with solvents. Use care when disposing of waste rags and towels to be sure they do not create fire or environmental hazards. Keep children and animals safely away when cleaning and assembling this machine.

Site Considerations

FLOOR LOAD

Your G5963 Surface Grinder represents a large weight load in a small footprint. Most commercial floors are suitable for the Model G5963. Some residential floors may require additional support to accommodate both machine and operator.

WORKING CLEARANCES

Working clearances can be thought of as the distances between machines and obstacles that allow safe operation of every machine without limitation. Consider existing and anticipated machine needs, size of material to be processed through each machine, and space for auxiliary stands and/or work tables. Also consider the relative position of each machine to one another for efficient material handling. Be sure to allow yourself sufficient room to safely run your machines in any foreseeable operation.

LIGHTING AND OUTLETS

Lighting should be bright enough to eliminate shadow and prevent eye strain. Electrical circuits should be dedicated or large enough to handle combined motor amp loads. Outlets should be located near each machine so power or extension cords are not obstructing high-traffic areas. Be sure to observe local electrical codes for proper installation of new lighting, outlets, or circuits.

⚠CAUTION

Make your shop "child safe". Ensure that your workplace is inaccessible to youngsters by closing and locking all entrances when you are away. Never allow visitors in your shop when assembling, adjusting or operating equipment.

SECTION 4: ASSEMBLY

Lifting the Grinder

The majority of the weight of the Surface Grinder is the grinding head. Take great care when lifting this unit from the crate and moving it into position on the stand. Remove the table from the crate first and set it aside until the grinder is completely secured to the stand.

This grinding head unit is very heavy, approximately 400 lbs. There is a lifting eye on the top of the upper unit which can be used with a chainfall or hoist to lift the unit into position. See Figure 3. Do not push on the upright sliding mechanism or get it jammed in any way during movement. This can damage the ways or the cross feed screw if too much pressure is applied to the upright.

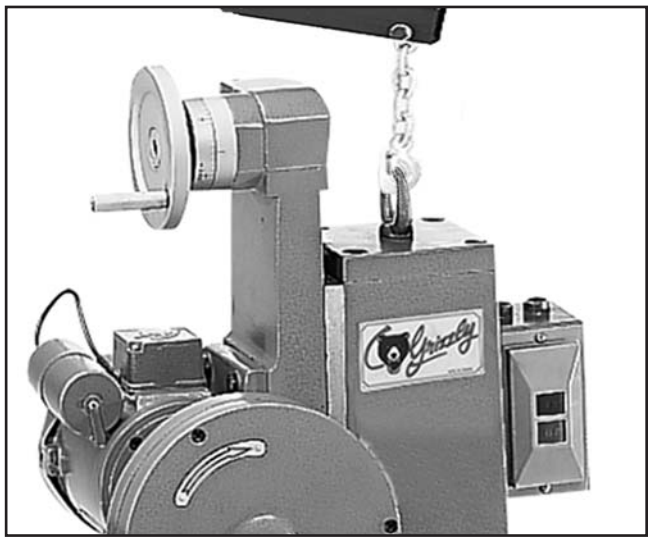


Figure 3. Lifting upper unit with chain hoist.

⚠CAUTION

This surface grinder is heavy and awkward to move. We recommend that you use the proper equipment to put the surface grinder into position in your shop or on a mobile base. Lifting without proper equipment or ample assistance could result in serious injury.

Mounting on Stand

Locate the stand as close to its final position as possible. Position the grinding head on the stand, lining up the four holes in the stand with the holes in the base of the head. Use four hex bolts, washers and nuts provided to secure the head to the stand.

Once the head is secured to the stand, loosen the bolt on the back of the upright. This allows the counterweight to move freely (it is locked into position for shipping purposes). This bolt can be completely removed or left in position should the weight need to be locked for future movement.

With the stand in its final location, adjust the leveling pads to bring the unit to a level position, making sure there are no wobbles or vibration in the assembly. In some cases, it may be useful to bolt the unit to the floor, or to put vibration isolation dampers underneath the feet of the stand to avoid vibration. The more solid the mounting of the unit is, the better the results that can be achieved in the grinding process.

Table and Handwheel

Wipe the V-grooves of the table and the saddle down with way oil (Mobil Vactra #2 or equivalent). The table rests by its own weight on the ways, and is oiled by the lubrication system. Set the sliding table in position on the saddle. Make sure the gear on the underside of the table engages with the gear on the handwheel shaft.

Thread the three spokes of the handwheel onto the hub, and tighten the jam nuts. Turn the handwheel back and forth to make sure the table moves freely.

The table dogs should be in position to stop the left and right movement of the table. Test these to make sure the travel is limited so there is no chance of moving the table too far in one direction. See Figure 4.

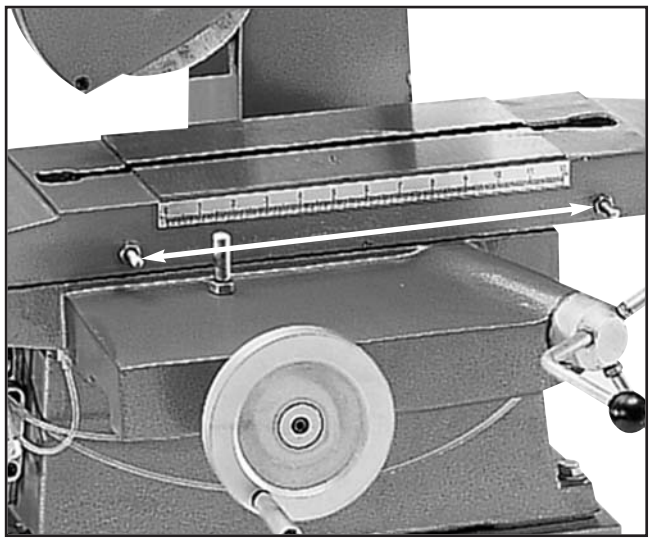


Figure 4. Table dogs limit table travel.

Guard

Attach the Guard to the left hand side of the table using the socket head cap screws provided. This guard helps to contain debris coming off the rotating wheel during the grinding operation.

Handwheel Handles

There are two handwheels which control cross feed and vertical movement. The handles for these handwheels need to be threaded in the hole in the outer edge of the wheel face.

SECTION 5: OPERATIONS

Overview

Once assembly has been completed, the G5963 Surface Grinder is ready for use in the shop.

Many adjustments have already been made at the factory, yet we recommend you familiarize yourself with all of the following procedures to gain a better understanding of the Surface Grinder's construction and operation.

Control locations are shown in Figure 5.

⚠WARNING

DO NOT make adjustments while the surface grinder is running. Ensure that the switch is off, power is disconnected and moving parts have stopped before making adjustments. Failure to comply could result in serious injury or electrical shock hazard.

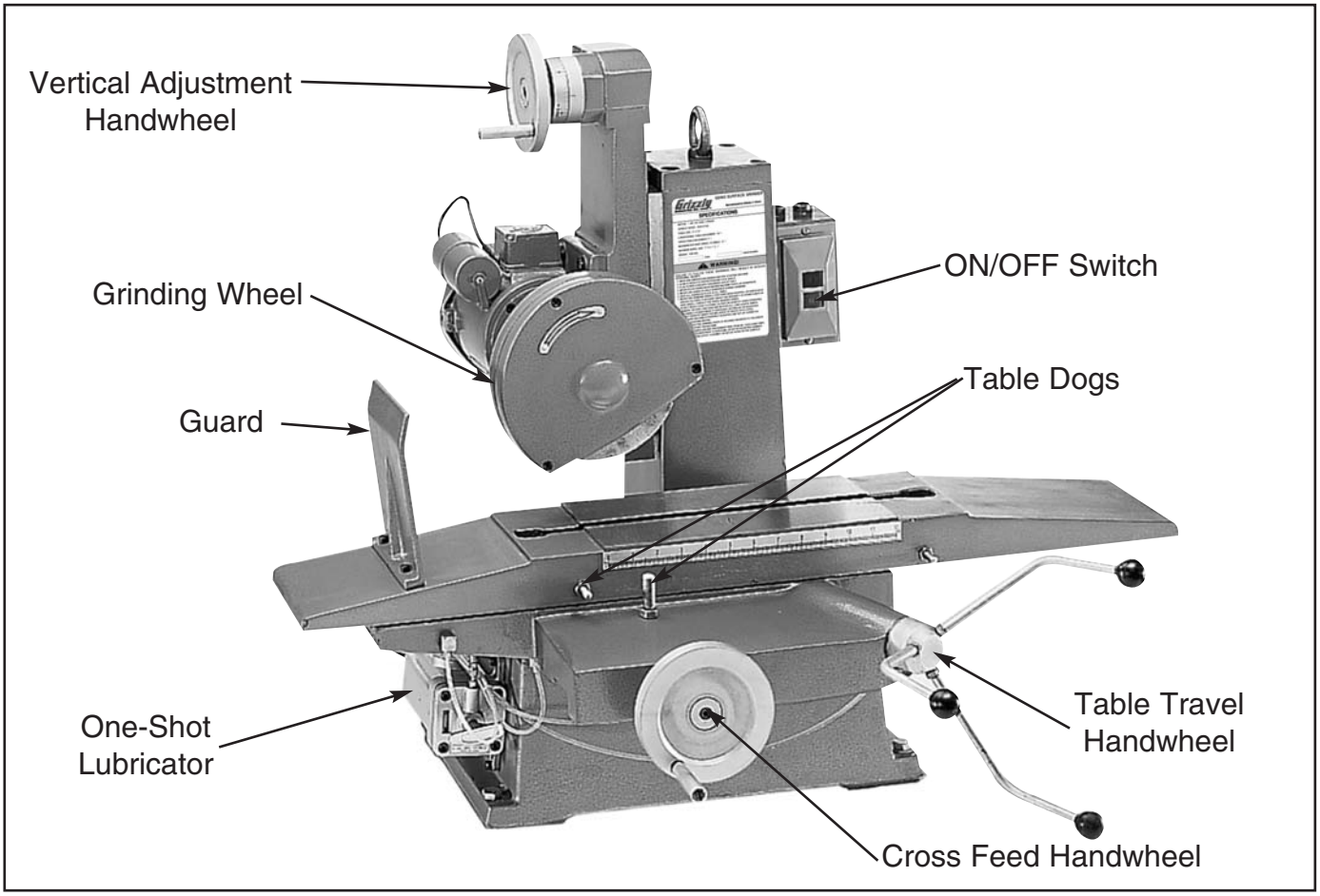


Figure 5. Overview of surface grinder controls.

Wheel Selection

Aluminum oxide and silicon carbide wheels are marked in a somewhat uniform manner by all the major manufacturers. Understanding these markings will help you understand the capabilities of various wheels. Always refer to the manufacturer's grinding recommendations when selecting a wheel for your project.

The basic format for wheel numbering is:

Prefix	Abrasive Type	Grit Size	Grade	Bond Type
36	A	60	L	V

The most common abrasive types used are A for Aluminum Oxide and C for Silicon Carbide, and occasionally SG for seeded gel. The prefix is the manufacturer's designation for a particular type.

The grit size is a number referring to the size of the abrasive grain in the wheel. The lower the number the coarser the wheel - 10 is a very coarse wheel for roughing and 220 is usually the upper range for fine finish work.

Grade is an indication of the hardness of the wheel, with A being softest to Z the hardest.

Bond Type refers to the type of bonding material used to hold the abrasive material. Most general purpose wheels will have a V indicating Vitrified clay is used, providing a high strength and good porosity. The other most common is B for resin where synthetic resins are used. These are used to grind cemented carbide and ceramic materials

There may be other numbers inserted which have meaning for a particular type of wheel. Refer to the manufacturer's technical data for a complete explanation.

Wheel Mounting

Before mounting any wheel, check it for integrity by performing a "ring check". Balance the wheel on one finger, then lightly tap the rim of the wheel with a piece of wood such as the handle of a hammer. The wheel should have a ringing or harmonic type of sound. If it responds with a dull thud it may indicate that the wheel has cracks. Do not use a wheel which is suspected of having cracks, or if there are visual chips, nicks or dents in the wheel surface. These discontinuities can lead to wheel failure where the wheel flies apart at operating speed. Always be sure to use a wheel which is rated for operating at speeds of 3450 RPM.

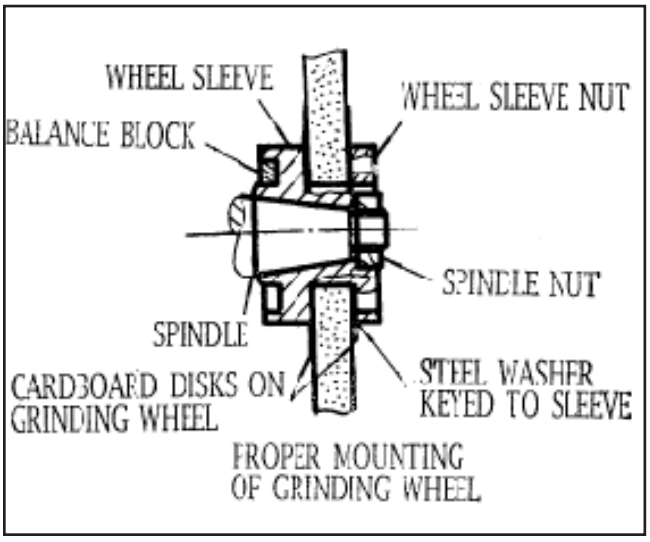


Figure 6. Cross-section of wheel assembly.

To mount the wheel (Refer to Figure 6):

1. Remove the wheel guard by unscrewing the three cap screws holding the cover in place.

2. With the Pin Wrench engaged in the two holes on the face of the Wheel Sleeve Nut, hold the spindle in position. Use the Adjustable Wrench on the Spindle Nut and loosen, keeping in mind that this is a left-hand thread.

3. If the wheel does not pull easily off of the taper, tap the end of the spindle lightly with a wooden or rubber mallet to loosen the wheel. Slide the wheel off of the taper.

4. Remove the Wheel Sleeve from the back side of the wheel.

5. Take the new grinding wheel and insert the Wheel Sleeve into the bore from the back of the wheel. Most wheels will have a paper disc on each side, this helps to equalize the clamping pressure. Do not remove these discs! The Wheel Sleeve should fit snugly in the bore of the wheel. If it is too loose, do not attempt to fill the gap with any other types of material. The wheel will not maintain proper balance. If it is too tight, do not attempt to force the wheel onto the Sleeve, as it may cause cracking of the wheel.

6. Thread the Wheel Sleeve Nut onto the opposite side of the wheel. Tighten enough to get a good seat on the sleeves against the paper discs, this helps to assure the wheel will not slip in operation. Do not overtighten, however, as this can cause stress on the wheel.

7. Slide this assembled wheel onto the spindle, making sure the wheel sleeve hole and the spindle taper are clean and free of any foreign material, dents or nicks.

8. Tighten the Spindle Nut using the Pin Wrench to hold the Sleeve and the Adjustable Wrench to tighten the Nut. Do not overtighten.

9. Replace the Wheel Guard and secure with three cap screws.

10. Run the wheel at full speed for at least one minute before doing any grinding. If there is a structural problem with the wheel, it will generally occur during the initial runup.

⚠CAUTION

Make certain the wheel has a tight fit on the Wheel Sleeve, and that the Sleeve Nut and Spindle Nut are properly tightened on the Spindle. Improper assembly of the grinding wheel can cause failure of the wheel which can result in a wheel breaking apart and causing injury from flying debris. Always have the Wheel Guard installed, even when test running the machine.

Wheel Balancing

The wheel and sleeve assembly should be balanced before mounting onto the Grinder. Generally the wheel itself will be balanced by the manufacturer. The Wheel Sleeve has Balance Weights positioned in a groove which can be moved to accomplish final balance of the assembly.

1. Mount the wheel on the sleeve assembly as described in the Wheel Mounting section. Position the weights so they are evenly spaced around the groove.

2. Mount the wheel on the Balance Arbor, which has a taper the same as that on the machine spindle. Tighten the nut on the arbor to lock the wheel in place.

3. Place the arbor across two parallel, level bars so the wheel is freely suspended. The wheel will turn until the heaviest side is down. Mark the heavy side with a chalk mark.

4. Loosen the setscrew on one of the Balance Weights opposite the chalk mark, and move it so it is 180˚ opposite the chalk mark.

5. Place back on the bars and observe whether one side is still heavy. It may be necessary to repeat Steps 3 - 5 several times until the wheel is balanced. When the arbor does not roll across the bars at all, then the wheel is in balance.

6. Remove the wheel from the Balance Arbor. Make sure the Balance Weight setscrews are firmly secured. Install wheel in the grinder.

Wheel Dressing

Dressing is performed on the face of the grinding wheel to sharpen the abrasives or to remove material which has imbedded in the surface. Dressing also makes the circumference of the wheel true to its centerpoint, thus insuring good grinding results. Wheels should always be dressed when first installed on the machine, and also periodically as the wheel is used. The frequency will depend upon the types of materials being ground, and the severity of the grinding operations. A wheel which will not balance properly may need to be dressed to true first to assure concentricity.

1. Insert the Dressing Diamond into the Dressing Fixture and attach the fixture to the table so that it is just right of the center line of the grinding wheel. See Figure 7.

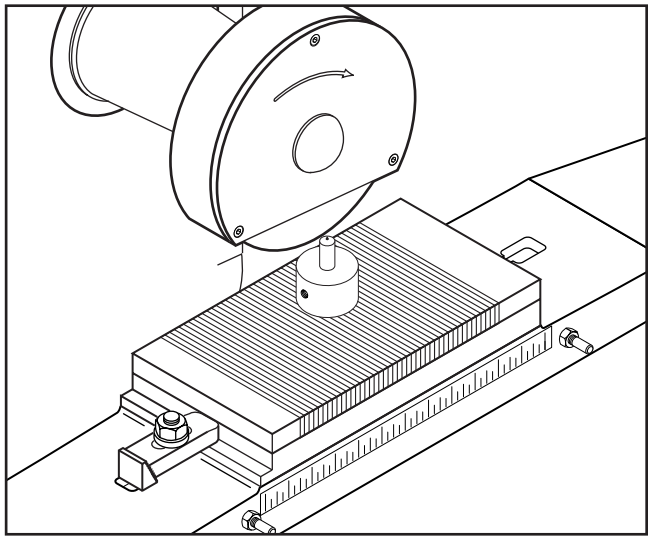


Figure 7. Dressing fixture mounted on magnetic chuck.

2. Lower the Vertical Adjustment Handwheel so the grinding wheel just comes in contact with the Dressing Diamond.

3. Move the Cross Feed Handwheel so the Dresser is in front of the wheel. Make certain there is no movement of the Longitudinal Handwheel during the dressing operation.

4. Turn the grinder on and let the wheel spin for at least one minute. Then advance the Cross Feed so the Dresser sweeps across the wheel. Lower the wheel .001" and repeat. Continue successive passes until the entire edge of the wheel is being cut. A better finish will result if the last couple of passes are less than .001".

5. Turn the machine off and remove the Dressing Fixture.

Oil Pump

The critical components of the machine are lubricated by means of the oil pump located on the left hand side of the machine. See Figure 8. Check the oil level periodically. Add new oil (Use a Way Oil such as Mobil Vactra #2 or equivalent) as needed to maintain the fluid level in the Oil Pump.

Pull the handle of the Pump out. Do not attempt to push it back in! The pump handle will slowly return to its original position as the lubricant is dispensed. Operate the Oil Pump at the start of each day the grinder is used. The grinding wheel does not need to be turned on for the Oil Pump to work.

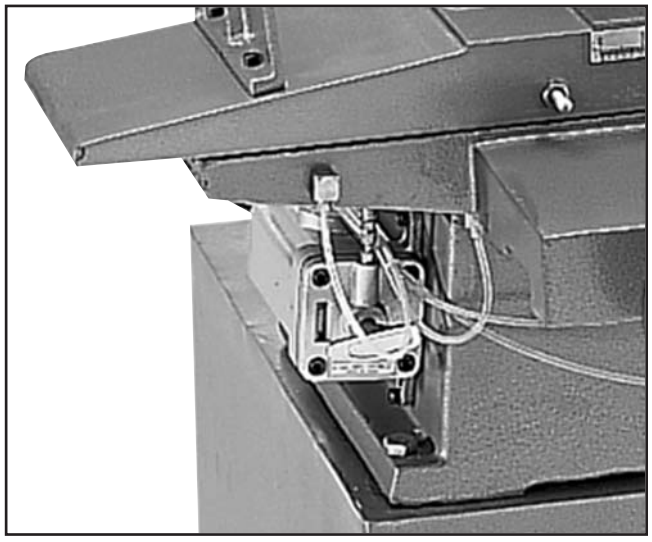


Figure 8. One-shot oil lubrication pump.

⚠WARNING

DO NOT make adjustments while the surface grinder is running. Ensure that the switch is off, power is disconnected and moving parts have stopped before making adjustments. Failure to ensure that power is disconnected could result in serious injury or electrical shock hazard.

Typical Operation

Operation of the grinder is controlled through the location and movement of the three handwheels. The Vertical Adjustment Handwheel controls the up and down movement of the grinding head. It is generally this axis which governs the amount of stock removal which will take place. Never attempt to remove too much material in one pass, much better results can be achieved with multiple passes.

The Cross Feed Handwheel controls the front to back movement of the table. When grinding a large surface, it will be necessary to sweep the wheel over the surface, then move the table, then take another sweep. Repeat this process until the entire surface is ground. See Figure 9.

The Table Travel Handwheel (the one with the three spokes) moves the table from left to right. This allows the ability to traverse the part back and forth underneath the grinding wheel.

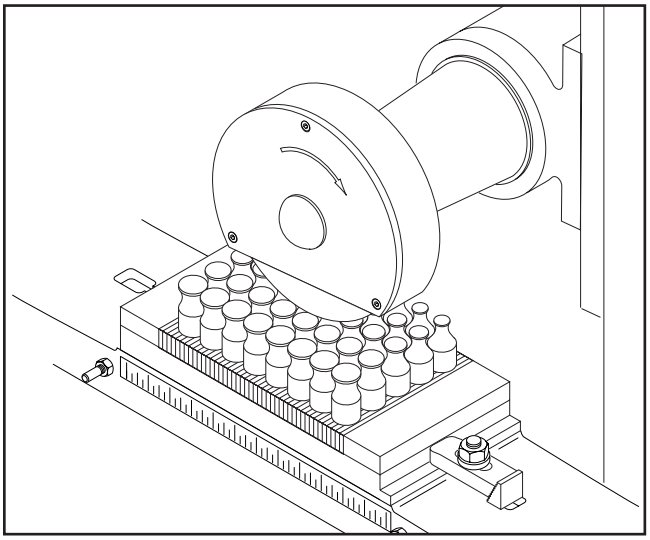


Figure 9. Grinding multiple pieces.

NOTICE

If a cut is taken that is too large, the surface grinder will bog down noticeably. The motor may even stall. If this happens, turn off the power immediately. Re-adjust the wheel height to allow a lighter cut and repeat the operation.

Accessories

In order to properly use this machine it is necessary to purchase some type of holding fixture. The workpiece must be firmly secured before beginning any type of grinding operations. Refer to the current Grizzly catalog for options. The most versatile holding device is a magnetic chuck. See Figure 10. With the throw of a lever anything magnetic can be firmly attached to the table without having jaws or fingers which might interfere with the grinding wheel.

Some types of grinding will also be aided by the addition of some type of lubricant or coolant. These can be introduced into the process by means of a spray device operated by hand or by a pump of some sort. The Grizzly catalog has several different options for adding coolant capability to your grinder.

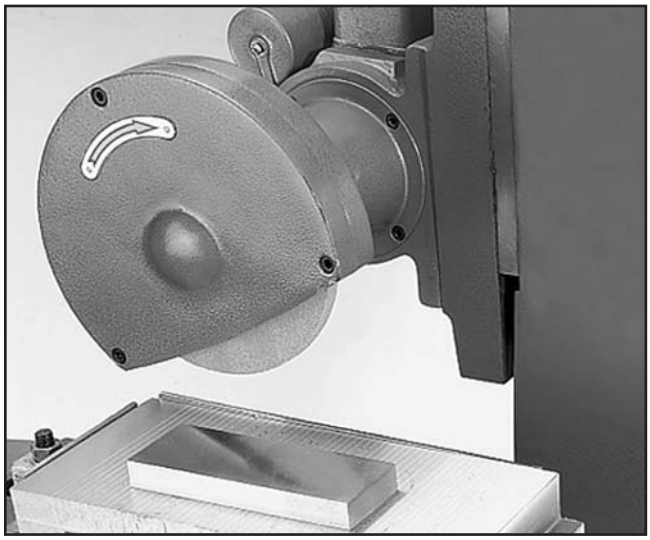


Figure 10. Magnetic chuck mounted on table.

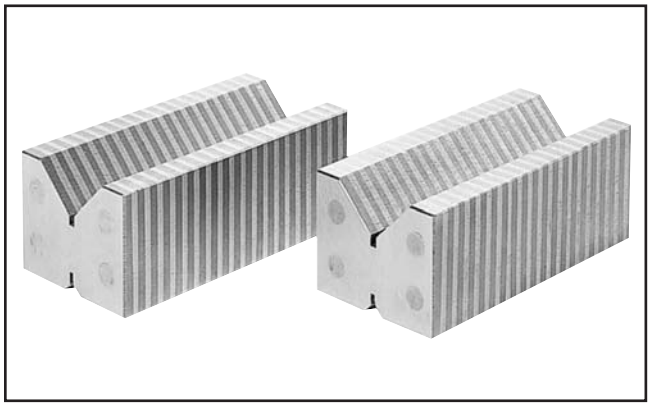


Figure 11. Magnetic V-Blocks for holding round stock

Test Run

Once the assembly is complete and the adjustments are done to your satisfaction, you are ready to test the machine.

Turn on the power supply at the main panel. Press the START button. Make sure that your finger is poised on the STOP button, just in case there is a problem. The surface grinder should run smoothly, with little or no vibration or rubbing noises. Strange or unnatural noises should be investigated and corrected before operating the machine further.

⚠WARNING

Operation of this equipment has the potential to propel debris into the air which can cause eye injury. Always wear safety glasses or goggles when operating equipment. Everyday glasses or reading glasses only have impact resistant lenses, they are not safety glasses. Be certain the safety glasses you wear meet the appropriate standards of the American National Standards Institute (ANSI).

NOTICE

Before starting any grinding job, run the sliding table back and forth with the motor off! Check to make sure there will be adequate clearances between the wheel and the holding fixtures or portions of the part which are not intended to be ground.

SECTION 6: MAINTENANCE

General

Make a habit of inspecting your Surface Grinder each time you use it. Check for the following conditions and repair or replace when necessary:

1. Loose mounting bolts.
2. Worn switch.
3. Worn or damaged cords and plugs.
4. Damaged Grinding Wheel.
5. Any other condition that could hamper the safe operation of this machine.

Table

The table and other non-painted surfaces on the Model G5963 should be protected against rust and pitting. Wiping the table surface with a slightly oily rag will protect bare metal surfaces from moisture.

Periodically lift the sliding table off of the ways and make sure the V-grooves and the helical gear underneath are free of debris and metal dust. Wipe the V-grooves of the table and the saddle down with way oil (Mobil Vactra #2 or equivalent) prior to reassembly.

Grinding Wheels

The grinding wheel should be inspected before every use. Use the ring check method noted in the Grinding Wheel section in Operations to verify the structural integrity. If using coolant during grinding, always run the wheel for 5-10 minutes at the end of the operation to remove any coolant from the wheel. Take care in storing grinding wheels to keep them free from potential damage by being dropped, or having other items drop on them.

Lubrication

Besides the one-shot lubrication system, the Model G5963 features factory-sealed bearings. A sealed bearing requires no lubrication during its lifetime. Should a bearing fail, your surface grinder will probably develop a noticeable rumble, which will increase when the machine is put under load. If allowed to get worse, overheating of the journal containing the bad bearing could occur. If the bad bearing is not replaced, it will eventually seize - possibly doing damage to other parts of the machine. Bearings are standard sizes and can be replaced through Grizzly.

SECTION 7: CLOSURE

The following pages contain parts diagrams, parts lists, general machine data and warranty/return information for your Model G5963 Surface Grinder.

If you need parts or help in assembling your machine, or if you need operational information, we encourage you to call the Grizzly Industrial Service Department. Our trained service technicians will be glad to help you.

If you have comments dealing specifically with this manual, please write to our Bellingham, Washington location using the address in the Introduction. The specifications, drawings, and photographs illustrated in this manual represent the Model G5963 as supplied when the manual was prepared. However, due to Grizzly's policy of continuous improvement, changes may be made at any time with no obligation on the part of Grizzly. Whenever possible, though, we send manual updates to all owners of a particular tool or machine. Should you receive one, add the new information to this manual and keep it for reference.

We have included some important safety measures that are essential to this machine's operation. While most safety measures are generally universal, Grizzly reminds you that each workshop is different and safety rules should be considered *as they apply to your specific situation.*

⚠WARNING

Always wear ANSI-approved safety glasses or goggles and hearing protection when operating equipment — particularly when testing new tools or machinery. Do not allow visitors into your workshop when testing or operating equipment. Serious injury may occur.

We recommend you keep a copy of our current catalog for complete information regarding Grizzly's warranty and return policy. If you need additional technical information relating to this machine, or if you need general assistance or replacement parts, please contact the Service Department listed in *Section 3: GENERAL INFORMATION.*

Additional information sources are necessary to realize the full potential of this machine. Trade journals, woodworking magazines, and your local library are good places to start.

⚠WARNING

The Model G5963 was specifically designed for metal grinding operations. DO NOT MODIFY AND/OR USE THIS SURFACE GRINDER FOR ANY OTHER PURPOSE. Modifications or improper use of this tool will void the warranty. If you are confused about any aspect of this machine, DO NOT use it until you have answered all your questions. Serious injury may occur.

⚠WARNING

Like all power tools, there is danger associated with the Model G5963 Surface Grinder. Use the tool with respect and caution to lessen the possibility of mechanical damage or operator injury. If normal safety precautions are overlooked or ignored, serious injury may occur.

MACHINE DATA SHEET

Customer Service #: (570) 326-3806 • To Order Call: (800) 523-4777 • Fax #: (800) 438-5901

GRIZZLY MODEL G5963 MANUAL SURFACE GRINDER

Design Type .....Floor Model

Overall Dimensions:
- Height .....57½"
- Length .....33"
- Width .....36½"
- Column Diameter.....5"
- Table Size .....6" x 12"
- T-Slot and Size ..... ½" Stud; ⅞" Head
- Spindle Diameter .....1¼"
- Shipping Weight .....660 lbs.
- Net Weight .....533 lbs.
- Footprint .....20" x 20"

Capacity:
- Max. Wheel Size .....7" x 1¼" x ½"
- Max. Distance, Wheel to Table .....8⅞"
- Longitudinal Travel .....13¼"
- Cross Travel .....7⅛"
- Spindle Speed (RPM) 3450
- Construction .....Cast Iron

Motor:
- Type .....TEFC Capacitor Start Induction
- Horsepower .....¾ HP
- Phase / Voltage .....Single Phase; 110V / 220V
- Amps .....7.4 / 3.7
- Prewired 110V
- Cycle and RPM .....60 Hertz / 3450
- Bearings .....Shielded, Permanently Lubricated

Features:
- .....Lubrication
- .....Column Dial
- .....Cross Feed Dial
- .....Heavy Gauge Sheet metal Cabinet
- .....One Shot Lubrication
- .....0.001" Graduations / Large Face Dial .50" / rev.
- .....0.001" Graduations / Medium face Dial .001" / rev.
- .....Power Indicator Lights

Accessories:
- .....Tool Box w/ Wrenches
- .....Grinding Stone Balance Kit
- .....Dressing Diamond w / Mount
- .....Leveling Pads
- .....Grinding Wheel

Specifications, while deemed accurate, are not guaranteed.

REVISED 1/2000

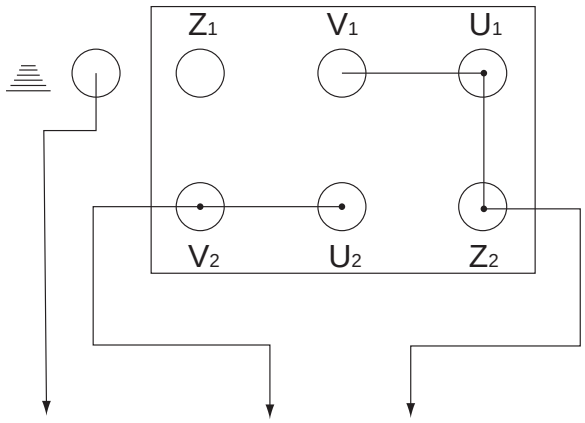
TROUBLESHOOTING

This section covers the most common processing problems encountered in grinding and what to do about them. Do not make any adjustments until surface grinder is unplugged and moving parts have come to a complete stop.

SYMPTOM	POSSIBLE CAUSE	CORRECTIVE ACTION
Motor will not start.	1. Low voltage. 2. Open circuit in motor or loose connections.	1. Check power line for proper voltage. 2. Inspect all lead connections on motor for loose or open connections.
Motor will not start; fuses or circuit breakers blow.	1. Short circuit in line cord or plug. 2. Short circuit in motor or loose connections. 3. Incorrect fuses or circuit breakers in power line.	1. Inspect cord or plug for damaged insulation and shorted wires. 2. Inspect all connections on motor for loose or shorted terminals or worn insulation. 3. Install correct fuses or circuit breakers.
Motor overheats.	1. Motor overloaded. 2. Air circulation through the motor restricted.	1. Reduce load on motor. 2. Clean out motor to provide normal air circulation.
Motor stalls (resulting in blown fuses or tripped circuit).	1. Short circuit in motor or loose connections. 2. Low voltage. 3. Incorrect fuses or circuit breakers in power line. 4. Motor overloaded.	1. Inspect connections on motor for loose or shorted terminals or worn insulation. 2 Correct the low voltage conditions. 3. Install correct fuses or circuit breakers. 4. Reduce load on motor.
Machine slows when operating.	1. Feed rate too high. 2. Depth of cut too great.	1. Slow down the rate of movement of the sliding table into wheel. 2. Reduce depth of cut by raising vertical adjustment.
Wavy condition on surface of workpiece.	1. Machine vibrating. 2. Grinding wheel not balanced. 3. Wheel is too hard. 4. Vertical slide loose.	1. Make sure machine is level and on a solid surface. 2. Balance the wheel. 3. Use softer wheel, or reduce the feed rate. 4. Adjust gibs on vertical slide.
Lines on surface of workpiece.	1. Improper cross feed 2. Improper feed rate. 3. Impurity on wheel surface. 4. Workpiece not being held tightly.	1. Use smaller cross feed increments per wheel pass. 2. Vary the rate of movement of the sliding table into wheel. 3. Dress Wheel again 4. Check vice or chuck for tightness to the table.
Burning spots or cracks in the workpiece.	1. Improper type of grinding wheel. 2. Improper feed rate. 3. Coolant required.	1. Try a wheel which is soft or a coarser grit. 2. Slow down the rate of movement of the sliding table into wheel. 3. Add optional coolant system or introduce coolant by hand.
Wheel dulls quickly, grit falls off.	1. Depth of cut too great. 2. Feed rate too fast. 3. Wheel is too soft. 4. Bad wheel dress. 5. Defective wheel bonding.	1. Raise wheel to reduce depth of cut. 2. Slow down the rate of movement of the sliding table into wheel. 3. Wheel too soft for the material being ground, select harder bond. 4. Dress the wheel. 5. Consult manufacturer of grinding wheel.
Wheel clogs and workpiece shows burn marks.	1. Wheel is too hard. 2. Feed rate too slow. 3. Bad wheel dress. 4. Coolant required.	1. Wheel too hard for the material being ground, select softer bond. 2. Increase the rate of movement of the sliding table into wheel. 3. Dress the wheel. 4. Add optional coolant system or introduce coolant by hand.

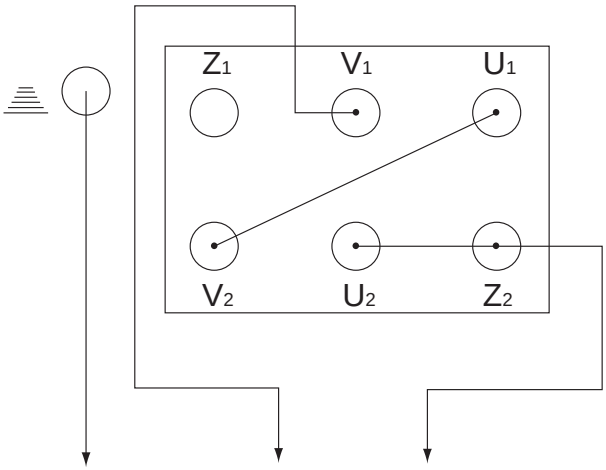
G5963 Surface Grinder
Wiring Diagram

110 Volt Operation



To Switch

220 Volt Operation

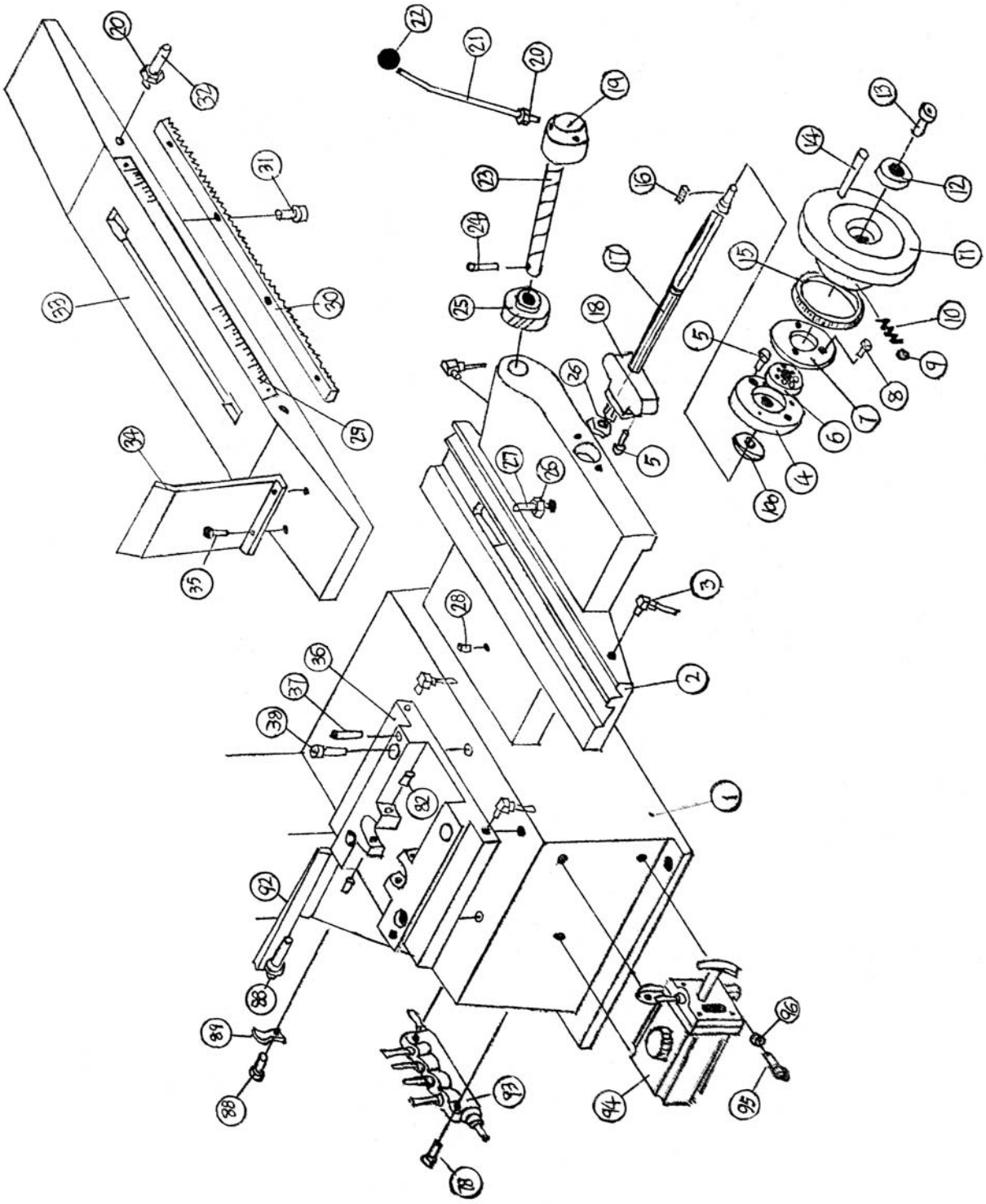


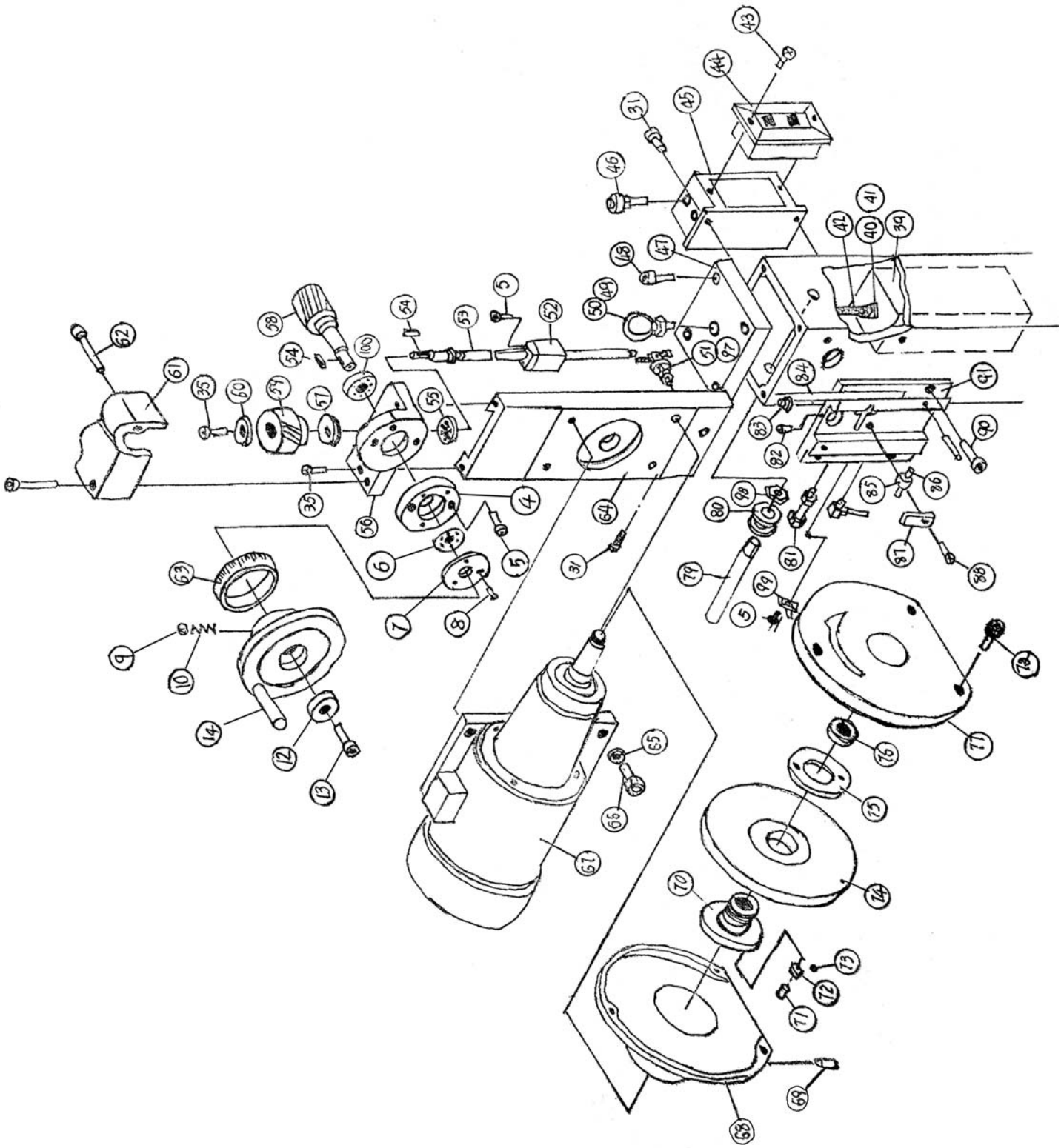
To Switch

Ref#	Part#	Description
001	P5963001	BASE
002	P5963002	BASE W/ DOVETAIL GROOVE
003	P5963003	OIL PIPE ELBOW
004	P5963004	BEARING BLOCK
005	PSB24M	CAP SCREW M5-.8 X 16
006	P5963006	BEARING 60202
007	P5963007	LOCKWASHER
008	PS09M	PHLP HD SCR M5-.8 X 10
009	P5963009	STEEL BALL 6MM
010	P5963010	SPRING
011	P5963011	HANDWHEEL
012	P5963012	SCREW SEAT
013	PSB01M	CAP SCREW M6-1.0 X 16
014	P5963014	HANDLE
015	P5963015	DIAL
016	PK37M	KEY 4 X 4 X 16
017	P5963017	LONGITUDINAL FEED SCREW
018	P5963018	NUT, SPECIAL
019	P5963019	HANDLE HUB
020	PN03M	HEX NUT M8-1.25
021	P5963020	LEVER
022	P5963022	GRIP
023	P5963023	CROSS FEED SHAFT
024	P5963024	TAPER PIN 5 X 30
025	P5963025	HELICAL GEAR, CROSS FEED
026	PN08M	HEX NUT M10 - 1.25
027	P5963027	LIMIT PIN
028	P5963028	OIL CUP
029	P5963029	SCALE
030	P5963030	RACK
031	PSB26M	CAP SCREW M6-1 X 12
032	P5963032	LIMIT PIN
033	P5963033	SLIDING TABLE
034	P5963034	GUARD
035	PSB02M	CAP SCREW M6-1 X 20
036	P5963036	LONGITUDINAL FEED TABLE BASE
037	P5963037	TAPER PIN 6 X 40
038	P5963038	CAP SCREW M10-1.25 X 35
039	P5963039	COUNTERWEIGHT
040	P5963040	EYE BOLT
041	P5963041	CABLE CLIP
042	P5963042	STEEL CABLE 3MM
043	PS19M	PHLP HD SCR M5-.8 X 6
044	P5963044	SWITCH 110/220V
045	P5963045	SWITCH BOX
046	P5963046	INDICATOR LIGHTS
047	P5963047	COVER
048	P5963048	CAP SCREW M10-1.25 X 25
049	PN13M	HEX NUT M16-2.0
050	P5963050	EYE BOLT 16MM

Ref#	Part#	Description
051	P5963051	ADJUSTMENT SCREW
052	P5963052	ELEVATION NUT
053	P5963053	ELEVATION LEAD SCREW
054	PK48M	KEY 4 X 4 X 20
055	P5963055	BALL BEARING
056	P5963056	SEAT
057	P5963057	THRUST BEARING
058	P5963058	GEAR SHAFT
059	P5963059	GEAR
060	P5963060	WASHER
061	P5963061	COVER
062	P5963062	CAP SCREW M6- 1.0 x 55
063	P5963063	DIAL
064	P5963064	VERTICAL DOVETAIL BASE
065	PW04M	FLAT WASHER 10MM
066	PB14M	HEX BOLT M10-1.5 X 35
067	P5963067	3/4 HP MOTOR
068	P5963068	REAR COVER
069	P5963069	HEX BOLT M8-1.25 X 10 W/CUP PT
070	P5963070	WHEEL SLEEVE
071	PSS02M	SET SCREW M6-1 X 6
072	P5963072	BALANCE WEIGHT
073	P5963073	STEEL BALL 4MM
074	P5963074	GRINDING WHEEL 31.75 X 13
075	P5963075	WHEEL COLLAR
076	P5963076	MOUNTING NUT
077	P5963077	FRONT COVER
078	PSB06M	CAP SCREW M6-1 X 25
079	P5963079	PULLEY SHAFT
080	P5963080	PULLEY
081	PB28M	HEX BOLT M8-1.25 X 60
082	P5963082	HEX BOLT M8-1.25 X 20 W/CUP PT
083	P5963083	GIB SCREW
084	P5963084	GIB STRIP
085	P5963085	PULLEY
086	P5963086	ROLL PIN 6 X 45
087	P5963087	LOCKING TAB
088	PS05M	PHLP HD SCR M5-.8 X 8
089	P5963089	OIL PIPE CLAMP
090	P5963090	CAP SCREW M10-1.25 X 14
091	P5963091	ELEVATION CARRIAGE
092	P5963092	GIB STRIP
093	P5963093	OIL MANIFOLD
094	P5963094	ONE SHOT 8CC OILER
095	PSB01M	CAP SCREW M6-1.0 X 16
096	P5963096	SPRING LOCK WASHER
097	PSB50M	CAP SCREW M5-.8 X 10
098	PN09M	HEX NUT M12-1.75
099	P5963099	LIMIT TAB
100	P5963100	THRUST BEARING

G5963 SURFACE GRINDER - LOWER ASSEMBLY





WARRANTY AND RETURNS

Grizzly Industrial, Inc. warrants every product it sells for a period of 1 year to the original purchaser from the date of purchase. This warranty does not apply to defects due directly or indirectly to misuse, abuse, negligence, accidents, repairs or alterations or lack of maintenance. This is Grizzly's sole written warranty and any and all warranties that may be implied by law, including any merchantability or fitness, for any particular purpose, are hereby limited to the duration of this written warranty. We do not warrant or represent that the merchandise complies with the provisions of any law or acts unless the manufacturer so warrants. In no event shall Grizzly's liability under this warranty exceed the purchase price paid for the product and any legal actions brought against Grizzly shall be tried in the State of Washington, County of Whatcom.

We shall in no event be liable for death, injuries to persons or property or for incidental, contingent, special, or consequential damages arising from the use of our products.

To take advantage of this warranty, contact us by mail or phone and give us all the details. We will then issue you a "Return Number'', which must be clearly posted on the outside as well as the inside of the carton. We will not accept any item back without this number. Proof of purchase must accompany the merchandise.

The manufacturers reserve the right to change specifications at any time because they constantly strive to achieve better quality equipment. We make every effort to ensure that our products meet high quality and durability standards and we hope you never need to use this warranty.

Please feel free to write or call us if you have any questions about the machine or the manual.

Thank you again for your business and continued support. We hope to serve you again soon.

WARRANTY CARD

NAME_____ PHONE NUMBER_____
STREET_____
CITY_____STATE_____ZIP _____
MODEL# _G5963 Surface Grinder_____ INVOICE#_____

The following information is given on a voluntary basis. This information will be used for marketing purposes to help Grizzly develop better products. Your name will be included in our mailing list only. It will not be sold to other companies. of course, all information is strictly confidential.

1. How did you find out about us?

__Advertisement __Friend __Website
__Catalog __Card deck __Other_____

2. Do you think your machine represents good value? __YES __NO

3. Would you allow us to use your name as a reference for Grizzly customers in your area? __YES __NO
(Note: Your name will be used a maximum of three times.)

4. To which of the following publications do you subscribe? Check all that apply.

__Home Shop Machinist __Rifle Magazine Other _____
__Projects in Metal __Hand Loader Magazine
__Modeltec __Precision Shooter
__Live Steam __RC Modeler
__Shotgun News __Model Airplane News

5. What is your annual household income?

__$20,000-$30,000 __$50,001-$60,000 __$80,000-$90,000
__$30,001-$40,000 __$60,001-$70,000 __+$90,000
__$40,001-$50,000 __$70,001-$80,000

6. To which age group do you belong?

__20-30 __41-50 __61-70
__31-40 __51-60 __+70

7. Which of the following machines or accessories do you own? Check all that apply.

__Engine Lathe __Abrasive Cutoff __Sheet Metal Machine
__Band Saw (Metal) __Arc Welder __Other _____
__Band Saw (Wood) __Oxy/Ac. Outfit
__Milling Machine __Air Compressor
__Bench Grinder __Drill Press

8. How many of the machines you checked in Question 7 are Grizzly machines? _____

9. Which of the following tooling and accessories do you own? Check all that apply.

__Milling Vises __Collet Closer __Digital Readout
__Indexing Head __Taper Attachment __Tool Post Grinder
__Rotary Table __Boring Head __Other _____

10. In the space below, list three tools you would like Grizzly to carry.

11. Of all the mail order metalworking company's you have purchased from, how do you rate Grizzly in terms of overall customer satisfaction?

__The best __Above average __Average
__Below average __The worst

12. Comments_____
_____
_____
_____

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BELLINGHAM, WA 98227-2069

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Street_____

City_____State_____Zip_____

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